

REMARKS

Reexamination of this application is respectfully requested. Although this amendment is being presented after final rejection, it is believed that the statements and claim amendments presented herein place the application in condition for allowance, and as such it is respectfully requested that the examiner enter the present amendment.

The examiner has rejected the proposed drawing corrections as they introduce new matter into the drawings. Applicant has withdrawn the proposed drawing corrections and will submit appropriate corrections upon allowance of the instant application.

Regarding the rejections of the claims, the following comments will address the rejections of claims 1 and 21, and by extension, claims 2, 13-18 and 21. Claim 1 pertains to transonic hull uniquely qualified in that the forward draft of its elongated body is no greater than the approximately 33% of its beam adjacent its stern. Claim 1 was rejected by examiner action mailed April 10, 03 on the following grounds:

- ▶ The claimed related draft and percentage (33%) of submersion relative to stern's beam find no support in the specification.
- ▶ That the 33% relation was not described in the specification in such a way as to enable one skilled in the art to make or use the invention.
- ▶ That 33% measured by applicant from the drawings are not sufficient because drawings are not required to be scale, and applicant never indicated that the drawings were to scale, hence 33% is new matter.
- ▶ Claim 1 is anticipated by Clapham.

In response to objections a) and c) applicant respectfully affirms that the 33% percentage has specific support in the specifications and drawings, respectively; in respect to b) applicant respectfully submits the 33% is described in a way that as required by patent law, any person with knowledge of the art and simple plane geometry can establish the percentage. This is demonstrated as follows:

Referring to Fig. 1, applicant specifies (pg. 6, line 7): "is a side view of TH having a hull

1 with a submerged hull portion 3 of length L the undersurface of which is at a negative angle of  
2 approximately 3.5 degrees relative to water level 5, with a deep draft forward." It follows from  
3 elementary trigonometry that the deep draft forward is necessarily L times tangent of 3.5 degrees =  
4 0.061 L. The specifications continue by providing a definition of the water beam from which  
5 elementary geometry establishes at once a value, as follows: "accordingly, the planview of TH of  
6 Fig. 1 as is shown in Fig. 2 with a waterplane (which) is substantially triangular (line 17, 18, Fig. 6)  
7 and, referring to Fig. 2, states " the semi angle of entry at bow is of small magnitude 7.1° as shown  
8 in the drawing, even though the length to beam ratio is large, i.e. 4:1" (lines 21-23, pg. 6).  
9 Accordingly, the half beam of waterplane is necessarily L tangent 7.1° = 0.125 L, and the waterplane  
10 beam is therefore 2 (tangent 7.1°) = 0.250 L.

11 Accordingly, the ratio of forward draft to water beam is  $0.061 L / 0.250 L = 0.244$ , which is  
12 24%. Accordingly, the specifications and drawings using elementary plane geometry obviously  
13 known to anyone skilled in the art supports claim 1 requirements of "less than 33%".

14 We now consider the case of a second embodiment mentioned in pg. 6 in respect to Figs. 1  
15 and 2: "an alternative deeper submerged portion 7 (in Fig. 1 compared to portion 3) make a larger  
16 angle of approximately 7° (compared to 3.5°) (lines 10 and 11, pg. 6)." In the second case the  
17 forward draft is evidently L tangent 7° = 0.123 L. The second embodiment for Fig. 2 mention a semi  
18 angle of entry larger than 7.1°. The specification states "the (semi) entry angle could be larger (than  
19 7.1°) up to about 11° (line 24), in which case the half water beam is evidently L tan 11° = 0.194 L  
20 and water beam is 0.378 L. Hence, the elementary ratio of draft forward to water beam aft is  $0.123$   
21  $L / 0.378 L = 0.325$  L, which is 32.5%, corresponding specifically to the less than 33% limitation  
22 of Claim 1.

23 It follows from the above review, that the limiting percentage of 33% of amended claim 1  
24 is inherent in the specifications and its Figs. 1 and 2 without need of a scale in the figures, and that  
25 the specification's teachings only require elementary knowledge in plane geometry to easily establish  
26 the 33% ratio. In consequence, it is respectfully submitted that the 33% of the claim 1 is clear and  
27 does not introduce new matter.

1 In passing, it is clarified here that the Mills teachings on that ratio are very precise and  
2 unequivocal, and demand that its draft forward in his Fig. 2 is necessarily equal to half (50%) that  
3 of his beam.

4 Applicant believes the hydrodynamic of his TH in his TH-II application is very important,  
5 and his 33% ratio for transonic hull shapes represent an important forward step that he has reason  
6 and obligation to protect. Accordingly, applicant now reviews the rejection of claim 1 on Clapham.

7 Clapham's patent is hydrodynamically unrelated to applicant's TH. Clapham could only  
8 relate to the way claim 1 was originally written, and its rejection can be easily overcome by this  
9 amendment without adding new matter. The irrelevance of Clapham is clear from its object:  
10 "improvement consists in dispensing with the center board and its attachments - and affixing as  
11 substitute two or more keels " (first 5 lines of his second column). Clapham identifies his Fig., 1 as  
12 "a longitudinal elevation (side view) of the improved body" (lines 6-2 of his first column). Examiner  
13 properly indicates its boat has a forward draft, hence a waterplane level, and a stern. Clapham  
14 identifies his Fig. 2 is a planview of its bottom. However, Fig. 2 does not identify or show any  
15 waterplane. Applicant indicates he is unable to find the waterplane which examiner indicates exist  
16 in Fig. 2. A waterplane necessarily terminates at the end of length waterline. The latter is clear in  
17 Fig. 1. If there were a waterplane in Fig. 2, it would necessarily terminate at the longitudinal station  
18 corresponding to the intersection of waterline and hull in Fig. 1. This is not shown in Fig. 2 because  
19 it has no waterplane.

20 In respect to the cross-section of Fig. 4, applicant recognizes that it has rectilinear but nearly  
21 vertical lines, necessarily in a vertical plane which cannot be interpreted as a generally rectilinear  
22 lines of a planview, which must be in a horizontal plane. Also, applicant respectfully submits that  
23 Clapham does not have a generally triangular planform which requires a base with a maximum width  
24 adjacent the triangular base, larger than the width of the main body of the triangle, whereas Clapham,  
25 by having a maximum width adjacent midbody, shows the shape of an elongated ellipse with one  
26 end truncated, and the other sharpened.

27 Applicant however recognizes that there is need to clarify the language of claim 1 which  
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1 precedes the 33% limitation, and has amended claim 1 to clearly recite those claim limitations.

2 Applicant respectfully submits that Clapham is irrelevant to applicant's invention, and that  
3 the amendments to claim 1, which add no new matter, nor raise new issues, clearly overcomes  
4 Clapham, and therefore enable granting the claim 1 as amended herewith and with the 33% limit,  
5 which is supported in the specifications and drawings, as has been shown above.

6 Regarding claim 21, a principal feature of claim 21 is that with a generally triangular hull,  
7 the draft adjacent the stern is between 1% and 4.5 % of the beam adjacent the stern.

8 Claim 21 has been rejected on the following grounds:

- 9 a) not described in the specifications as to enable one skilled in the art to make or use invention.  
10 b) the 4.5% of claim 21 not supported by the specifications  
11 c) by Clapham patent

12 In respect to rejection a), applicant respectfully indicates the specifications are clear to any  
13 person skilled in the art, as follows: the definition of stern draft is shown as item 21,  $\Delta Z$ , in Fig. 4,  
14 and in the specifications, pg. 9, lines 12, 13: "... $\Delta Z$  in static conditions such as is shown by draft  
15 21 on static TH (boat) 24, in Fig. 4, with an undersurface angle (B") ... etc. Also, the definition of  
16 the relation of stern draft to stern beam is clearly defined in pg. 9, lines 20-24: "The effect of static  
17 draft  $\Delta Z$  on hydrodynamic drag under forward motion is shown in Fig. 6a, with relative drag changes  
18 on the vertical axis (of Fig. 6a), and the static stern draft  $\Delta Z$  in the horizontal axis, expressed as  
19 fractions of stern's beam 25 in Fig. 5, that is  $\Delta Z / B$ ". It is noted here that Fig. 5 defining beam 25  
20 is a top view of Fig. 4, which defines in side view draft 21. Accordingly, the ratio of static stern draft  
21 to stern beam is clearly taught to anyone skilled in the art.

22 In respect to rejection b), that the statement that the 4.5% in claim 21 is not supported by the  
23 specifications, applicant points that the specifications and drawings do teach the 4.5% in a manner  
24 necessarily understood by anyone skilled in the art, as follows: Both Figs. 6a and 6b have the same  
25 horizontal axis  $\Delta Z / B$  already proven to be clearly defined. The figures are to scale cover a  $\Delta Z / B$   
26 range from 0 to 0.1. Fig. 6a has as a vertical axis, with percent changes of drag showing the  
27 following gains: (drag reduction) at speed / length ratio of 1.45 i.e. supercritical: 34% at  
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1 approximately  $\Delta Z / B = 0.02$ , with a drag bucket which defines for designers a useful range of axis  
2 clearly including a test point at  $\Delta Z / B = 0.045$ , with approximately a 30% drag reduction evident in  
3 the figure. The same figure shows that at a speed / length ration of 1.05, i.e. sub critical, the drag  
4 reduction is 51% at a  $\Delta Z / B$  value of 0 and 0.01 but also indicates that a substantial drag reduction  
5 is attained at  $\Delta Z / B = 0.045$ , estimated in the lower drag curve of Fig. 6a to be also in the range of  
6 30%. Accordingly, the value of  $\Delta Z / B = 0.045$  corresponds clearly to a test point indicated in the  
7 top curve of Fig. 6a as an upper limit of a useful drag bucket, at which  $\Delta Z / B$  value gains of 30%  
8 are also attained at the lower speed / length ratio of 1.05 of the bottom curve of Fig. 6a.

9 Further clear specific indication of the upper limit of usefulness of the value of  $\Delta Z / B =$   
10 0.045 is shown by the relation of its vertical axis LCG / L showing CG position in Fig. 6b, to the  
11 horizontal axis having a cut off of its useful curve clearly marked in Fig. 6b a  $\Delta Z / B$  of substantially  
12 0.045. This upper cut-off corresponds to the explanation given in pg. 11, lines 17 and 18: "It is also  
13 possible to use a shorter LCG from stern, for example to 0.385, but those choices start running into  
14 stability problems". Anyone skilled in the art would be guided by the cut-off to select  $\Delta Z / B$  at  
15 approximately 4.5% to impede LCG positions below approximately 0.39, as taught in the  
16 specifications. Accordingly, the above explanation, is clear that as originally filed the  $\Delta Z / B = 0.045$   
17 = 4.5% is the upper limit of the  $\Delta Z / B$  range for useful drag bucket and center of gravity position  
18 taught in the specifications and drawings in a manner that can be understood by anyone skilled in  
19 the art.

20 Accordingly, applicant respectfully submits that his specifications and drawings are clear,  
21 in respect to ratio of stern draft to stern beam ratio of claim 21, including the 4.5% upper limit of that  
22 ratio as originally filed, and claim 21, as amended by this amendment is allowable (see following  
23 comments).

24 In respect to the rejection on Clapham, applicant respectfully points out that Clapham does  
25 not show any waterplane, consequently, the ratio of stern draft to waterplane is not possible for  
26 Clapham, and should not be used to reject Claim 21. Moreover, even in the hypothesis that Clapham  
27 had a waterplane and a waterplane beam adjacent the stern, the draft of the waterplane of Clapham  
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1 adjacent the stern s clearly zero. (the stern being aft of the end of waterline) and the ratio would be  
2 zero. For the reasons explained, applicant believes the rejection of claim 21 on Clapham is not  
3 applicable. Notwithstanding the above, to expedite the allowance of claim 21, applicant has  
4 substantially narrowed the scope of claim 21 as set forth above and as clarified as follows:

- 5 • Speed range has been added to claim 21, covering static (Pg. 7, lines 4 and 5, and pg. 9, line  
6 13) to a speed to length ratio no less than approximately 1.25 (pg. 7, lines 7 and 8).
- 7 • The claim identifies the center of gravity teachings related to Figs. 6b, and Figs. 4 and 5.
- 8 • The midbody beam is substantially less than stern beam, a property of triangular shapes not  
9 shown by Clapham.

10 Accordingly, applicant respectfully submits amended Claim 21 is allowable. Applicant will  
11 accept disclaimer in respect to any prior Calderon patent if this is necessary in Examiner's view.  
12 Furthermore, Applicant is prepared to shorten the life from this TH-II patent application to that of  
13 any prior TH patent of applicant, if this is deemed necessary by examiner, and to that end has  
14 submitted a terminal disclaimer regarding Claims **13-17**.

15 Furthermore, the rejections of claims **13, 15 and 18** as being anticipated by Clapham are  
16 believed to have been overcome for the same reasons expressed above in connection with claims **1**  
17 and **21**. To overcome rejection on Clapham, as has been explained in relation to Claim 21, Applicant  
18 has amended independent claims 13 and 15 to specify that TH's waterplane beam adjacent midbody  
19 of TH is substantially less than TH's waterplane beam adjacent its stern, a property of generally  
20 triangular planform which clearly overcomes rejection on Clapham's conventional hull, which, in  
21 any case, does not show a waterplane at all, as was reviewed in greater detail in the discussion of  
22 Clapham relative to Claim 21.

23 Finally, claims **2, 14, 16 and 17** were rejected along with claims **1, 13 and 15**, but Applicant  
24 wishes to clarify that he does not claim exclusive rights to the features defined in those claims  
25 independently, but rather only in combination with the present invention as defined in claims **1, 13**  
26 and **15**. For the reasons expressed above in connection with claim **1** and for the structural limitations  
27 added by these claims, claims **2, 14, 16 and 17** are believed to be allowable with claim **1, 13 and 15**.

1 Finally, regarding the rejections of claims **19** and **20** under Ramde, applicant believes that  
2 the present amendments to those claims render them allowable over Ramde. Specifically, Ramde  
3 necessarily teaches, and claims, sinusoidal sides to his body's planform. As such, each side has  
4 curvature reversals, also known as inflections. This is directly contrary to the generally rectilinear  
5 sides of Applicant's invention. Claims 19 and 20 have been amended to recite that the sides are -  
6 free of inflections - but, if preferred, could read - free of curvature reversals -. Moreover, Ramde  
7 teaches length-to-beam ratios of about 2, whereas Applicant teaches length-to-beam ratios of  
8 approximately 4, specifically as stated on page 6, line 23. Accordingly, Claim 20 has the added  
9 limitation of "length-to-beam greater than approximately 4." Therefore, Ramde cannot anticipate  
10 applicant's claimed invention as shown in amended claims **19** and **20**, and in fact cannot be fairly  
11 interpreted to suggest applicant's invention. Claims **19** and **20** are thus believed to be allowable.

12 Applicant has invented a transonic hull which is superior to those hulls found in the prior art.  
13 As such, it is believed that this invention is deserving of protection, and the granting of such  
14 protection is respectfully requested.

1 Applicant is mailing this amendment after expiration of the three month response period but  
2 within the third month's extension of time permitted by 37 C.F.R. § 1.136 and accompanied by the  
3 fee set forth in 37 C.F.R. § 1.17(a). This application is thus believed to be in condition for allowance  
4 of all claims remaining herein, and such action is respectfully requested.

5 Respectfully submitted,

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13 CERTIFICATE OF MAILING

14 I hereby certify that this Amendment for a TRANSONIC HULL AND HYDROFIELD II,  
15 Serial N° 09/672,190, was mailed by first class mail, postage prepaid, to Mail Stop Non-Fee  
16 Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 10th  
17 day of October, 2003.

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